

Highlighting the Importance of Coral Reefs: An Economics Research Agenda



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[Photo: In Southeast Asia, the health of coral reefs is declining steadily.]

Undervalued and ill-treated, Southeast Asia's coral reefs face collapse unless more is done to highlight just how valuable they are.

This stark warning was given by reef specialist [Jack Ruitenbeek](#), an adjunct professor at the [University of Victoria](#), during his presentation earlier this year at an [Economy and Environment Program for Southeast Asia](#) (EEPSEA) conference in Singapore. EEPSEA is sponsored by the International Development Research Centre (IDRC) and eight other donors.

Don't panic

With the advice, don't panic, keep breathing, Dr Ruitenbeek, a divemaster and one of the world's leading experts on the economics of coral reef management, took his audience on a dramatic, if depressing, virtual reef survey. Over the past 15 years, he said, reefs in the Indo-Pacific region have shown a steady decline, succumbing to sedimentation, pollution, and the impact of cyanide or blast fishing.

Drawing on the most recent [Reef Check](#) survey (coordinated by the [Hong Kong University of Science and Technology](#)), he reported that the amount of live coral has declined from about 80% in 1997 to 65% in 1998, with coral in remote regions suffering as much as coral near highly populated areas. The state of the remaining reefs — as shown by the absence of key indicator species — is also a cause for major concern.

Declining numbers

Almost 80% of sites surveyed showed no live lobster, one half of sites showed no large groupers, while sea cucumbers, humphead wrasses and giant clams have all suffered substantial decline — the latter due to the insatiable appetite of the sashimi restaurant trade. And the region's coral were not spared the coral bleaching crisis of 1997-98, when changes in sea conditions — linked by many to El-Nino — caused corals around the world to lose their colour as the algal cells in their tissues died.

Although the causes of this problem are complex and differ markedly from country to country, Dr Ruitenbeek highlighted some underlying institutional and enforcement problems, including weak marine protection, poor control of land-based pollution, the over-harvesting of marine products, and the mishandling of resource use conflicts. On paper, the marine protected area system in southeast Asia is pretty good. What needs to be done is to strengthen the management of these parks, he argued. What is needed is better enforcement of the law.

Economic valuation

According to Dr Ruitenbeek, one way to improve the situation is through good economic research — in particular, valuation of the reef resource. We need to signal to policy makers that there is a management problem right now, which is generating a loss of economic value, he stressed, underlining his belief that if governments and communities realize that they are being hurt in their wallets, then they are more likely to act. This is part of the communication role that environmental economics can play.

For Dr Ruitenbeek, key economic losses include the decimation of sustainable fisheries, tourism potential, and genetic value, which result from reef destruction. The Great Barrier Reef, for example, harbours a billion dollar annual tourism industry. In addition, more than 30 drugs derived from marine species were under pre-clinical investigation in early 1999 — a potential multi-billion dollar drug treasure-trove.

Marine conservation

Dr Ruitenbeek noted that research which attempts to value reefs can provide a vital mechanism to ratchet up marine conservation in the region — supporting and driving awareness building, institutional strengthening, pollution control, and conservation management. But if you look at the literature, surprisingly little has been done, he added.

There is a dearth of worldwide marine valuation studies. For example, a comprehensive literature search revealed only 41 such studies. Of these, only seven involved southeast Asia. Dr Ruitenbeek attributes this to problems associated with marine property rights and jurisdiction, a relative lack of information about marine issues and, perhaps most critically, an unfounded complacency that there is no problem, because the ocean holds unlimited wealth.

Research priorities

After challenging his audience to take up reef-valuation research, Dr Ruitenbeek outlined some specific research priorities. While most valuation is art aspiring to be science, he said, valuing ecosystems as poorly understood as coral reefs is more like magic aspiring to be art. For example, extrapolating figures from a few sites yields an estimate that southeast Asia's coral reefs are worth just over US\$1.4 trillion in total. But how credible is that figure and what does it mean?

For Dr Ruitenbeek, any figure gained through such a benefit transfer approach is flawed because one hectare of reef can not be treated the same way as any other hectare. Site-specific variations, and the fact that reef users — whether tourists or fish — can often move elsewhere when a reef is damaged, mean that it is misleading to average out the value of reef benefits. How likely is it that every coral reef in the world would generate similar levels of tourism and recreation benefits as the prime quality sites usually studied? he asked.

Site-specific

To help create more effective policies, research should be site-specific, stressed Dr Ruitenbeek. National policies and institutions can play a supportive role. But issues and problems differ considerably from site to site. Policies directed to site-specific problems are more readily monitored and will generally have greater immediate impact.

He added that the key aim of future reef research should be to support policies that will improve the management of marine protected areas in Southeast Asia. This involves research that will inform projects like the sustainable harvesting of reef products or the development of tourism that limits sediment and nutrient flows onto reef areas.

Feedback

Dr Ruitenbeek's recommendations are generating significant interest. Already researchers from the Philippines and Sri Lanka are interested at looking into the effectiveness of local institutions on coral reef management, noted EEPSEA's Director, David Glover. We are hoping that many more will respond in the same way.

Rufus Bellamy is a Singapore-based writer who specializes in environmental issues. (Photo: L. Funkhauser, International Marinelife Alliance)

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Links to explore ...

[Along the World's Coastlines](#), by Jennifer Henderson

[Project Seahorse: Conserving the Oceans' Medicinal Resources](#), by Jennifer Pepall

[Protecting Coral Reefs: Eco-Fishing in the Philippines](#), by Patrik Hunt

[The Environmental and Social Impact of Commercial Shrimp Farms](#), by Andrew Scott